Claims:

1. (Currently amended) A method of creating frequency diversity in a multicarrier OFDM signal to overcome impairment caused by periodic nulls in a multipath channel, the method comprising by assigning redundant copies of each data bit of a message to a plurality of carriers to create a non-periodic bit carrier assignment wherein frequency intervals between carriers assigned to a data bit is are different for each interval.

2. (Currently amended) A method of allocating data bits to carriers for transmission in a multicarrier modulation symbol, which comprises a plurality of carriers each capable of being modulated with at least one data bit, to create frequency diversity and overcome impairment caused by periodic nulls in a multipath channel, the method comprising the steps of:

selecting a data bit from a message;

redundantly assigning the data bit to a plurality of carriers comprising the steps of:

assigning the data bit to a first carrier;

assigning the data bit to a second carrier with a first carrier spacing from the first carrier;

assigning the data bit to a third carrier with a second carrier spacing from the second carrier that is different from the first carrier spacing; and

repeating the steps of selecting data bits and redundantly assigning data bits to carriers until all data bits are assigned to carriers and all carriers have a data bit assigned; [[.]]

wherein the assignment of data bits to carriers produces non-periodic carrier spacing of carriers modulated by the same data bit.

3. (Original) The method of claim 2 wherein each carrier spacing for each data bit is different from every other carrier spacing for the data bit.

4. (Original) The method of claim 3 wherein the ratio of carriers to data bits is 16.

5. (Canceled)

6. (Currently amended) A method of transmitting a message comprising bits of data using a plurality of multicarrier modulation symbols over a multipath channel to create frequency diversity that is resistant to nulls at periodic frequency intervals, each symbol comprising a plurality of carriers capable of being modulated with at least one data bit, the method comprising the steps of:

determining the number of data bits transmitted in each symbol;

selecting from the message a number of data bits equal to the number of bits transmitted in each symbol; and

assigning each data bit to a plurality of carriers wherein the separation of the carriers used to transmit each data bit is non-periodic.

7. (Canceled)

8. (Canceled)

9. (Currently amended) An OFDM modulator for transmitting a binary data word in a symbol having frequency diversity comprising:

a ramp counter for producing a series of bin number values;

a look up table for mapping the bin number values to bit select values, the look up table comprising entries that produces assignment of bits to non-periodic carriers within the symbol;

3

a data selector for selecting at least one bit from the binary data word according to each bit select value; and

5   an amplitude mapper for producing complex I and Q <u>carrier</u> amplitudes for the selected bits.

10. (Canceled)

<u>11. (New) The method of claim 2 wherein some carriers are zeroed to avoid interference resulting from</u>
10   <u>the transmitted signal.</u>

<u>12. (New) The method of claim 6 wherein some carriers are zeroed to avoid interference resulting from</u>
<u>the transmitted signal.</u>

15   <u>13. The OFDM modulator of claim 9 further comprising means for disabling the I and Q carrier</u>
<u>amplitudes for a particular carrier and zeroing the transmitted energy for that carrier.</u>